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LAKES OF THE UINTA MOUNTAINS.*

BY

WALLACE W. ATWOOD.

The Uinta Mountains, located in the northeastern portion of Utah, are not commonly visited, and therefore retain a primeval condition that has a special charm to true lovers of nature. The rugged peaks of deep red rock rise to elevations between 10,000 and 13,500 feet. Dense pine forests clothe the gentler slopes, and in the valley bottoms there are extensive meadowlands. The summer climate is mild and not too wet; feathered game is abundant and there is some large game; the lakes and streams abound in fish, and in all ways the western portion of the range is an ideal camping ground.

A panoramic view from any one of the lofty peaks of the Uinta Mountains would include scores of beautiful glacial lakes. These lakes are grouped in great amphitheatral areas near the crest line of the range. They are commonly surrounded by a dense forest growth, and when seen from a high peak must be classed among the most attractive scenic features of the range (Fig. 1). From the summit of Bald Mountain 70 lakes may be seen, and in the basin of Provo Cañon 43 lakes were counted from a single outlook point. There are more than 500 lakes in the range.

The great amphitheatral areas, where the lakes are grouped, were the catchment areas for the glaciers that formerly existed among these mountains. They are broad, flat-bottomed basins bordered by precipitous walls that rise 1,000 to 2,000 feet. The unforested portions of the basin-floors are commonly without soil, and the bare rock surfaces exposed yet retain the striations and grooves made by the ancient glaciers. In several instances the glacier ice gouged out deep basins in the solid rock, and such basins are now commonly occupied by water. The bed rock surrounding these lakes is usually polished and striated, and in some cases striæ and glacial grooves may be seen beneath the water.

In the basin of the Weber Cañon, the ice gouged out the alternately softer beds in a series of inclined strata, and in the depressions there are now chains of rock-basin lakes separated from each other by the ridges of harder rock (Fig. 2). On the main divide of the range and just north of Mount Watson, at the head of Provo Cañon, there are five small lakes. At one end of the chain the striæ point northward into one of the headwaters of the Weber. At the other end of the chain the movement of the ice was to the south into the Provo Cañon.

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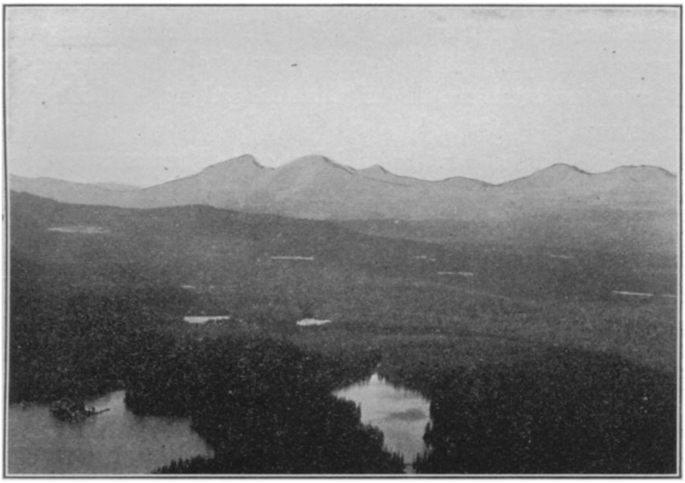

FIGURE 1.

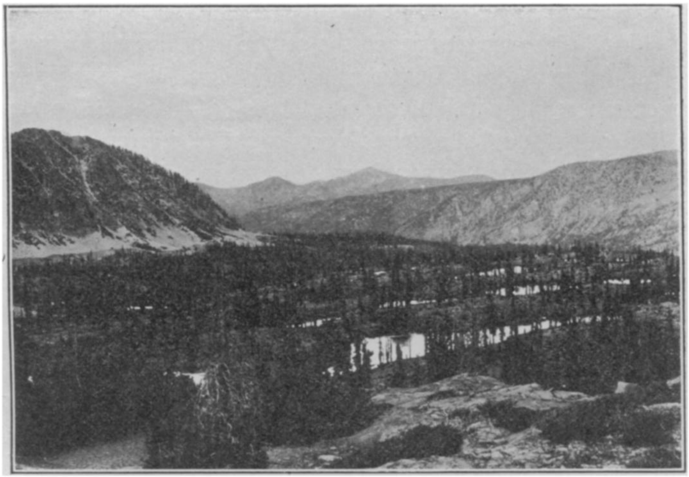

FIGURE 2.

Most of the lakes among the Uinta Mountains are in drift basins formed by the irregular distribution of the morainic deposits. In the great gathering grounds or catchment areas where the glaciers originated, most of these drift-basin lakes are in the ground moraine or rolling deposits on the floors of the catchment areas (see Fig. 1). Some are located at the margin of the catchment areas where the rock wall forms one boundary (Fig. 3). In such cases the lake basin may be in part in solid rock gouged out by the ice and in part formed by morainic deposits, so lodged as to block drainage from that area.

In the cañons the drift-basin lakes are either among the hummocks of a morainic ridge crossing the cañon or just up stream from such a ridge (Fig. 4). In certain valleys the morainic ridges have ponded the drainage at several points and so developed chains of lakes. These lakes are usually connected by a stream which is actively engaged in lowering the outlets and thus hastening the obliteration of the lakes.

Most, if not all, of the lakes are being invaded by plant life, and successive stages of vegetal filling are shown. Some of the lakes have the long-stemmed pond lilies working out from the shores (Fig. 5), others with pond lilies in the centre have zones of rushes and grasses advancing from the margins and fast crowding out the lilies. Fig. 6 shows a small lake with the central portion so occupied by a small flowering plant that no considerable body of water is exposed. Finally, the grasses reach the centre and a meadow marks the site of the former lake. In some of the cañons chains of meadows now exist where formerly there were chains of lakes. The lowering of the lake outlets and the growth of vegetable matter have assisted in the development of the meadows.

Another class of lakes is due to the ponding of tributary streams by the lateral moraines of the main cañon. Such lakes were much more common than at present, but their waters have either found seepage routes through the morainic dams or they have risen, overflowed and cut narrow V-shaped notches as outlets to the main. They were in hanging valleys, and when their outlets were cut to the level of the tributary valleys, the waters yet had 300 to 500 feet to descend before reaching the main stream. The descent from the tributary to the main is now accomplished by a series of falls or cascades.

A few small lakes exist between the lateral moraines of adjoining cañons. The space available for such a lake basin is just above the junction of the two lateral moraines where a medial moraine is formed.

There is one crescent-shaped lake in the range lodged between a lateral moraine and a cañon wall. At a sharp turn in the course of one of the ancient glaciers, it appears that the ice, in making the turn, did not quite conform to the cañon, but swung out from the wall far enough to form a small basin. During the presence of the glacier the ice formed a large part of the basin rim, and drainage from the ice presumably filled the basin. Since the retreat of the glacier, a lateral moraine which was deposited where the edge of

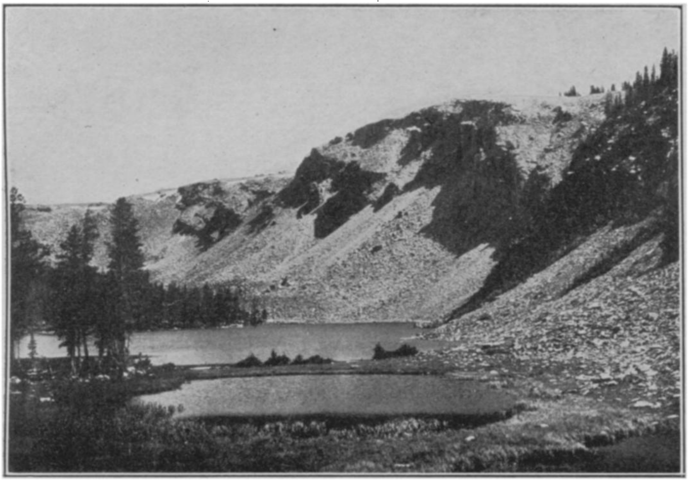

FIGURE 3.

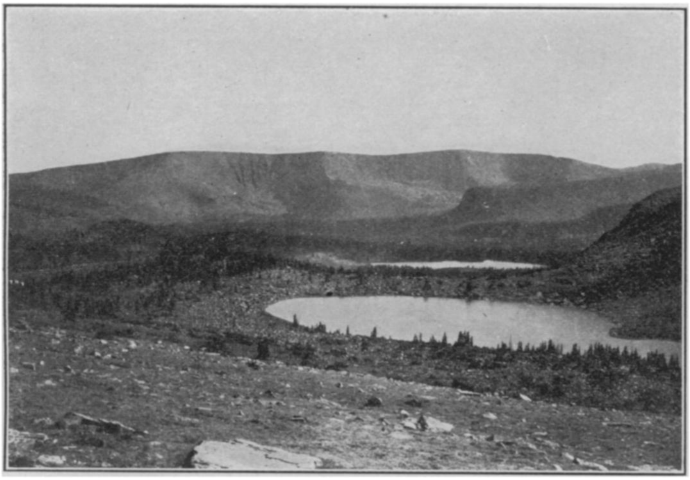

FIGURE 4.

the ice rested has effectually blocked the drainage from this area and thus preserved a lake basin.

The only exception to the glacial origin for the lake basins of

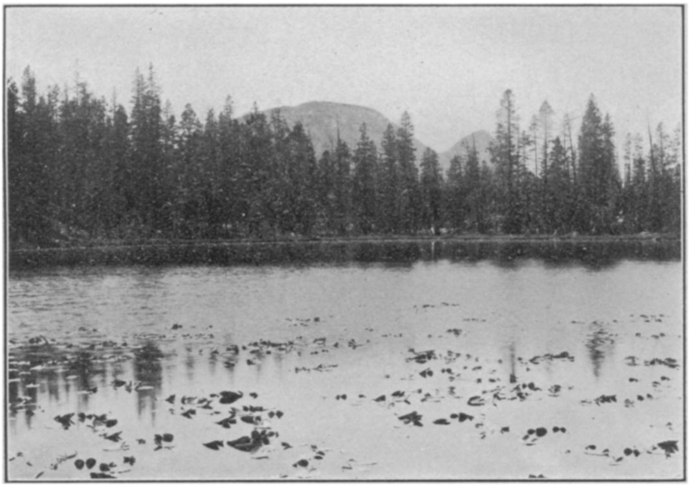

FIGURE 5.

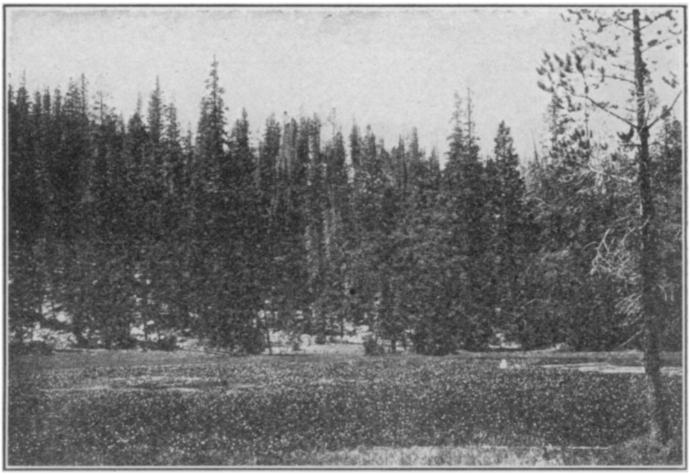

FIGURE 6.

the Uinta Mountains is found in a few basins that are due to landslides. The lakes in landslide basins are lenticular in form with their longer axes parallel to the cliff from which the land loosened and slipped.

In a few cases simple efforts have been made to control the lake waters for irrigation. In many cases, outlets of former glacial lakes could be closed by inexpensive dams and new reservoirs made. Many of the younger terminal moraines in the cañons have but narrow notches cut through them. If these post-glacial notches were closed, extensive reservoirs would be formed in the lower portions of the cañons. Such waters would be of immediate value on the ranch-lands at the north and south margins of the range. But each year the streams are lowering the outlets of the lakes, and both widening and deepening the cuts through the moraines in the cañons, and therefore the amount of work necessary to get control of the water-supply in the range steadily increases.

LAKE IBRAHIM: A PROTEST AND A DECISION.

Lake Ibrahim is an expansion of the Nile between Urondogani and Mruli, a portion of the river unknown to the geographers of the world until the year 1874, when Col. Ch. Chaillé-Long, Chief of Staff under Gen. Gordon, Governor of the Egyptian Equatorial Provinces, having concluded with M'Tesa, King of Uganda, the treaty which extended the jurisdiction of Egypt over the entire Nile basin, embarked at Urondogani on the Victoria Nile, discovered and explored the great lake beyond and landed at a point opposite Mruli.

Of this expedition Gen. Gordon wrote in a letter published in the New York *Herald* of January 23, 1880:

> "Those who care to study the successive steps which built up the map of the course of the Nile will know that to Speke is due the discovery of one portion, to Baker that of another, and to Col. Chaillé-Long that of another portion and of the lake alluded to."

It was the Khedive Ismail who gave the name *Ibrahim* to the lake discovered by Chaillé-Long.

This was for several years the accepted name of the lake, sometimes with the addition of a native name, *Kodja, Choga,* or *Gita Nzige,* as in Ravenstein's map of East Equatorial Africa, published under the authority of the Royal Geographical Society by E. Stanford, in 1882.*

After the year 1882 (the date of the British occupation of Egypt),

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*In this map the date of Chaillé-Long's discovery of Lake Ibrahim is erroneously printed 1875, instead of 1874.